OPERATING MANUAL

Supplied with Calibration certificate

TM 200
Thermometer

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Technical features

TM200 connection

On the top :
2 secured mini-DIN connectors for SMART-plus probes

Left side :
1 USB port for KIMO cable only
1 power supply plug

Interchangeable measurement modules

Current / Voltage module:

Connection : 2 stereo jacks

Thermocouple module :

Connection : 4 inputs for compensated miniature plug of thermocouple K, J or T type
Class 1 (as per IEC 584-3)

Display

Graphic display 128x128 pixels
Dim. 50 x 54 mm
Blue blacklit
Display of 6 measurements (including 4 simultaneously)

Housing

ABS shock-proof
IP54

Keypad

Metal-coated,
5 keypad
1 joystick

Conformity

Electromagnetic compatibility
(as per NF EN 61326-1)

Power supply

4 alcalines batteries 1,5V LR6

Ambient

Neutral gas

Operating and storage temperature

Operating temp. : From -20 to +80°C;
Storage temp.: From 0 to +50°C

Auto shut-off

adjustable from 0 to 120 min

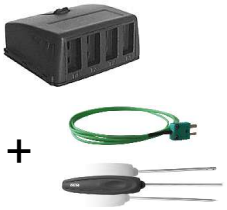
Weight

340 g

Languages

French, English

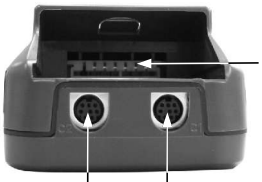
Specifications

	Measuring units	Measuring range	Accuracy*	Resolutions
CURRENT / VOLTAGE				
	V, mA	From 0 to 2,5 V From 0 to 10 V From 0 to 4/20 mA	±1mV ±10mV ±0.01mA	0,001 V 0,01 V 0,01 mA
THERMOCOUPLE (See related datasheet)				
	°C, °F	K : From -200 to 1,300°C J : From -100 to 750°C T : From -200 to 400°C	±1,1°C or ±0,4% Reading value** ±0,8°C or ±0,4% Reading value** ±0,5°C or ±0,4% Reading value**	0,1 °C 0,1 °C 0,1 °C
Pt100 probes (See related datasheet)				
	°C, °F	From -50 to 250°C (according tomodel)	±0,3% of reading ±0.25°C (according to model)	0,01 °C

*All accuracies indicated in this document were stated in laboratory conditions and can be guaranteed for measurements carried out in the same conditions, or carried out with required compensation.
** The accuracy is expressed either by a deviation in °C or by a percentage of the value concerned. Only the bigger value is considered.

Description

Top view



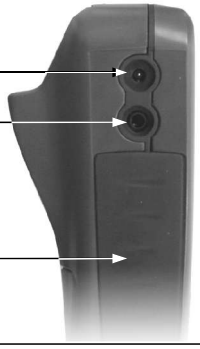
Module connections

mini-Din C2 connector

mini-Din C1 connector

Graphic display

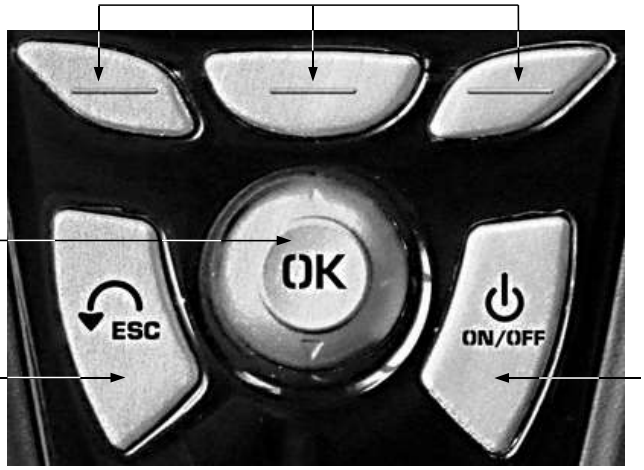
Side view



Keypad

Access keys for circular menu

Browsing joystick :
- 4 directions
- Validation



Escape key

On/Off key

Connections

Interchangeable measurement modules

Interchangeable modules with Smart-plus system are automatically recognized when connected to the instrument.

1. Current / Voltage module

It allows current or voltage measurements on **V/A1** or **VA/2** channels with current/voltage input cables or ammeter clamps.

2. Thermocouple module

It allows thermocouple temperature measurement on **Tc1, Tc2, Tc3** and **Tc4** channels with type **K, J** or **T** with wire thermocouple probes equiped with a miniature male connector.

Wire probes with Smart-plus system

Wire probes with Smart-plus system are automatically recognized when connected to the instrument.

mini-Din **C2** connector

mini-Din **C1** connector

Probes are connected on min-DIN connectors **C1** and / or **C2**

Secured Mini-Din Connector

Retractable cable lg. 450 mm, up to 2.4 m.

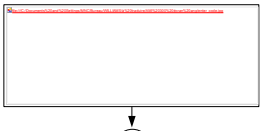
Wireless probe/instrument communication

Wireless communication between probe and instrument with automatic recognition after power-up.

Pt100 probes are displayed on **Tr1**, **Tr2** channels followed by wireless communication

Wireless probes shall be located near the instrument for initial recognition. Connection between TM200 and wireless probes must be established. See submenu "Wireless probes" p 8.

Power-up



Enter key code with directional pad.
(if the locking is activated)
◀ ▶ and ▲ ▼

OK

Homepage display

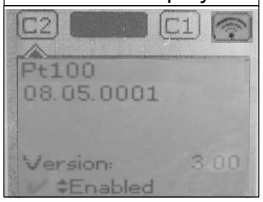
Infos ↔ Probe ↔ Params

OK

Select a sub menu with access keys
or with arrow keys ◀ ▶

Probe connection

Probes display



Select a connection with right and left keys ◀ ▶
Connections can be activated or deactivated with ▲ or ▼

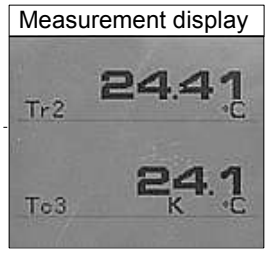
Infos ↔ Measure ↔ Params

Select a sub menu with access keys
or with arrow keys ◀ ▶

Measurement

Return to
previous screen

Measurement display

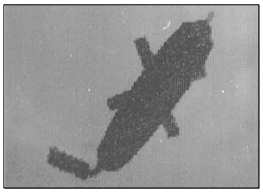


Hold ↔ Config ↔ Delta T
Rec. ↔ Alarms ↔ Params

OK

Select a sub menu with access keys
or with arrow keys ◀ ▶

Communication interrupted



Check probes connection

Probe menu

1. Using wire probes and modules

Wire probes and modules with Smart-plus system are automatically recognized from first connection.
The "**Probe**" menu only appears when probes or module are connected. This menu allows to view probe information plugged to **C2, Module, C1** or **wireless connections**.
(See « Connections » p 6 for more information about connections).

Probes display

Infos ↔ Measure ↔ Params

Available information are :

• Sensor type, Serial number, Date of last calibration or adjustement, Probes Status (enabled ou disabled).
On enabled mode, the probe is connected, the measurement is carried out and the value is displayed.
On disabled mode, the probe is connected, the measurement is not carried out and the value is not displayed.

2. Using wireless communication

A- Add a wireless probe

A1. Go to probe menu by pressing "**Probe**" access key.
A2. With arrow keys ◀ and ▶ , go to "**RF probes**" display.
A3. Select **New** with access key.
A4. Power up the probe and press multifunction button until LED blinks. Once the probe is recognized, information appears.
Left button ◀ allows to return to the wireless probes display and to access all wireless probes already recognized by the instrument. With access keys, it is possible to delete **Del** a wireless probe.

RF probes

RF probes searching

RF probes detected

RF probes display

B- Select a wireless probe already created.

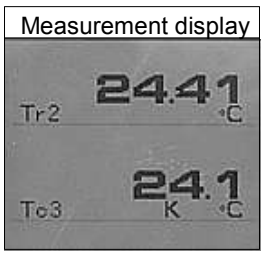
B1. Power up the wireless probe (short press on Multifunction button).
B2. Go to "**Probe**" menu.
B3. With arrows keys ◀ and ▶ , go to "**RF probes**" display. All the wireless probes already recognized appear.
B4. Select the suitable wireless probe with ▲ or ▼.
B5. Go to probe informations using arrow key ▶.
B6. Enable the wireless probe with arrows keys ▲ and ▼ and confirm with **OK** .

Functions

The following functions are enabled only if at least one probe is connected.

- **Hold** (Hold - Min/Max)
- **Config** (Configuration)
- **Δ T** (Delta T)
- **Alarms**
- **Rec** (Recording)
- **Params** (Parameters)

Measurement display



Hold / Min-Max

Press 1x in order to select **HOLD** function : measurement holding on display.
Press 2x in order to select **Min-Max** function : display of minimum and maximum values.
Press 3x : back to the continuous measurement.

Hold ↔ Config ↔ Delta T
Rec. ↔ Alarms ↔ Params

Configuration

If you use thermocouple probes, you must enter type into the Configuration sub-function.

Configuration sub-function allows to:

• *Select thermocouple*

Click on **OK** or ▶ to enter into sub function : a list of thermocouple available (K, J or T type) appears .
Select type with ▲ and ▼. Confirm with **OK**.

• *Select display*

Click on **OK** or ▶ to enter into sub function. Select channel required with arrow keys ▲ and ▼ and confirm with **OK**. With ▲ and ▼. Select respectively **ON** or **OFF** with ▲ and ▼ in order to enable or disable this function. Confirm with **OK** .

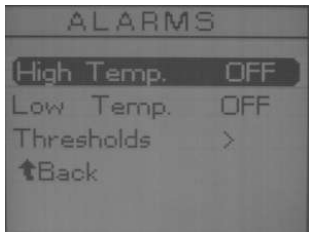
• *Select units*

Click on **OK** or ▶ to enter into sub function : a list of units available appears. For each channel, select unit required with ▲ and ▼.
Confirm with **OK**.
Click on **Esc** to return to previous screen.

Delta T

When two PT100 probes or 2 thermocouple temperature probes are connected, TM200 can calculate Delta temperature value : the temperature difference between **C2** and **C1**, or **T2** and **T1**, or **T4** and **T3**.
Select **Delta T** in order to view the temperature difference.
If you select **Delta T** again, Delta T function is disabled.

Alarms

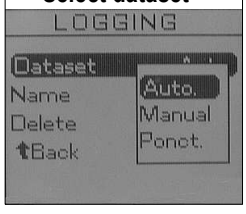


Select respectively **ON** or **OFF** with ▲ and ▼ in order to enable or disable the alarm. Choose your setpoint : CO Limit 1 (first CO setpoint), CO Limit 2 (second CO setpoint), low temperature setpoint and high temperature setpoint. Confirm with **OK** or ▶ .
Select thresholds with **OK** or ▶ to enter CO and temperature setpoints. Select + or – signs with ▲ and ▼ then pass on the first digit with ▶. Low and high **thresholds** entered, confirm with **OK** .

Recording

The Recording menu allows a measurement dataset. You can choose between a planned or a continuous dataset.

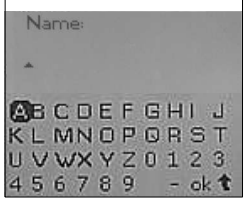
Select dataset



1. Create or launch a continuous dataset

A continuous dataset can be carried out using TM200 and is composed of several dated measuring points. The operator can choose an automatic or a manual dataset, with an instant value or an average. This datasets can't be set using Datalogger-10 Software.

Enter name



1.1 Manual dataset

A **manual dataset** is composed of measuring points selected by the operator.

Manual dataset

a. Click on **OK** or ▶ to enter into sub function.
b. Select **Manual** with ▲ and ▼. Confirm wih **OK**.
c. Select **Name** with ▲ and ▼. Confirm wih **OK** or ▶. Enter dataset name with arrow keys ◀ ▶ and ▲ ▼. Confirm wih **OK**.
d. For measurement launching, click on **OK** with the access key. The number of points selected and the parameter are displayed.
e. To save your dataset click on **Save** with the access key.

1.2 Automatic dataset

Automatic dataset

An **automatic dataset** is composed of measuring points with interval of time.
a. Click on **OK** or ▶ to enter sub function.
b. Select **Auto.** with ▲ and ▼. Confirm wih **OK**.
c. Select **Name** with ▲ and ▼. Confirm wih **OK** or ▶. Enter dataset name with the arrow keys ◀ ▶ and ▲ ▼.
Confirm wih **OK**.
d. Enter dataset time and interval of time between 2 measurements by selecting **Period** with access key. Select **Duration** or **Interval** with ▲ and ▼. Confirm wih **OK**. Enter minutes and seconds with arrow keys▲ and ▼ (from 1 minute to 24 hours for the duration and from 5 seconds to 10 minutes for the interval). Confirm with **OK**.
e. Select **Start** for dataset launching.

2. Launch a planned dataset

A planned dataset is composed of several locations. For each location, the operator can enter a theorical value and a tolerance for the parameter to be controlled. Planification must be made via the software.
a. Click on **OK** or ▶ to enter into sub function.
b. Select **Planned** with ▲ and ▼. Confirm wih **OK**.
c. Choose dataset name with ▲ and ▼. Confirm wih **OK**.
d. Select the location with ▲ and ▼. Confirm wih **OK**.

3. Delete all datasets

Select **Delete** with ▲ and ▼. Confirm wih **OK**.

Parameters

- ***Language***

Click on **OK** or ▶ to enter and a list of languages available appears.
Select language with arrow keys ▲ and ▼ and Confirm wih **OK**.

- ***Date / time***

Click on **OK** or ▶ to enter into sub function. Enter the day with ▲ and ▼ then move to the next digit with ▶. Repeat this operation for the month, year, hour and minute. Confirm wih **OK**.

- ***Beep***

This sub-function allows to enable or disable the keypad beep. Click on **OK** or ▶ to enter into the sub function. Select respectively **ON** or **OFF** with ▲ and ▼ in order to enable or disable the beep.
Confirm wih **OK**.

- ***Auto shut-off***

This sub-function allows to enable the automatic shut-off and to select the delay in minute. Click on **OK** or ▶ to enter into the sub function. Select, with ▲ and ▼, **OFF** in order to disable the automatic shut-off or enter the delay (from 15 to 120 minutes).
Confirm wih **OK**.

- ***RF logging***

This sub-function allows to enable or disable the **RF Logging**. Click on **OK** or ▶ to enter into the sub function. Select respectively **ON** or **OFF** with ▲ and ▼ in order to enable or disable this function.
Confirm wih **OK**.

- ***Contrast***

This sub-function allows to modify the contrast. Click on **OK** or ▶ to enter. Select your contrast level (from 0 to 9) with ▲ and ▼.
Confirm wih **OK**.

- ***Backlit***

This sub-function allows to modify the backlit. Click on OK or ▶ to enter. Select your backlit level (from 0 to 9 or **AUTO**) with ▲ and ▼.
Confirm wih **OK**.

If you select AUTO, the TM200 adjuts automatically the backlit according to the room brightness.

- ***Key locking***

This sub-function allows to enable or disable the **key lock**. Click on **OK** or ▶ to enter into sub function. Select respectively **ON** or **OFF** with ▲ and ▼ in order to enable or disable this function.
Confirm wih **OK**.
If the locking is enabled, the code menu appears

- ***Code***

This sub-function allows to enter the **security code**. Click on **OK** or ▶ and the code appears. Enter the first digit of the code with ▲ and ▼ then move to the next one with ▶**.** Confirm wih **OK**.

Downloading data

See DataLogger-10 User manual chapter **III – Read device** page 6.

Info menu

This menu allows to view the serial number of instrument and firmware version.

Battery

When battery indicator flashes it is recommended to change the batteries:

1. Remove the front part at the back of the instrument.
2. Remove batteries
3. Insert new batteries (AA-LR6 1,5V) in accordance with proprer polarity drew inside the housing.
4. Replace the front.

Maintenance

KIMO performs calibration, adjustment and maintenance of all your instruments to guarantee a constant level of quality of your measurements. In regards of Quality insurance norms, we recommend that the instruments are checked once a year.

Warranty

KIMO Instruments have 1-year guarantee for any manufacturing defect (return to our After-Sales Service required for appraisal).